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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/088,200

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Thomas Lisec

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EXAMINER

FRANK, RODNEY T

ART UNIT

PAPER NUMBER

2856

DATE MAILED: 03/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/088,200

Applicant(s)

LISEC ET AL.

Examiner

Rodney T. Frank

Art Unit

2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8 and 9 is/are allowed.
- 6) ☒ Claim(s) 1-7 and 10-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3,5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Objections

1. Claim 7 is objected to because of the following informalities: the word -sensor—should be placed between the words “The” and “element” at the beginning of the claim to remain consistent with the base claim 1. Appropriate correction is required.
2. Claim 10 is objected to because of the following informalities: In the second line of the claim, “bubble” should be replaced with -bubbles-. Appropriate correction is required.
3. Claim 11 is objected to because of the following informalities: In line 16 of the claim, “the conductivity boundary” is mention and the examiner feels this should be replaced with -the liquid level—for consistency. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 4 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. There is no support in the specification to determine the distance between electrode pairs to be approximately 100 μm .
6. Claim 3 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it

Art Unit: 2856

pertains, or with which it is most nearly connected, to make and/or use the invention. There is no support in the specification for the "or" recitation in the claim.

7. Claim 17 rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. There is no support in the specification for an alternating current in the range of 100 millivolts.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 10-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. Claim 10 recites the limitation "the bubble" in claim 8. There is insufficient antecedent basis for this limitation in the claim. The examiner feels the applicant meant to depend this claim from claim 9.

11. Claim 11 recites the limitation "the bubble" in the detecting portion of the claim. There is insufficient antecedent basis for this limitation in the claim. The examiner feels this should read -a bubble-.

12. Claim 11 recites the limitation " the conductivity boundary " in the detecting portion of the claim. There is insufficient antecedent basis for this limitation in the claim.

13. Claim 12 recites the limitation "the conductivity boundary" in the last section of the claim. There is insufficient antecedent basis for this limitation in the claim.

Art Unit: 2856

14. Claim 13 recites the limitation "the path difference" in claim 11. There is insufficient antecedent basis for this limitation in the claim.

15. Claim 15 recites the limitation "the displaced liquid volume" in claim 13. There is insufficient antecedent basis for this limitation in the claim.

16. Claim 16 recites the limitation "the resulting current" in claim 11. There is insufficient antecedent basis for this limitation in the claim.

17. Claim 18 recites the limitation "displaced liquid volume" in claim 14. There is insufficient antecedent basis for this limitation in the claim.

18. Claim 19 recites the limitation "the resulting current" in claim 12. There is insufficient antecedent basis for this limitation in the claim.

19. Claim 20 recites the limitation "the resulting current" in claim 13. There is insufficient antecedent basis for this limitation in the claim.

20. Claim 14 recites determining the liquid level "comprising the steps of:

Jumps in the resistance values upon movement of a bubble by parallel monitoring of the resistance values of all electrode pairs; and..." This section is unclear and needs to be clarified.

Claim Rejections - 35 USC § 102

21. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

22. Claims 1-3, 5, and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Murata et al. (U.S. Patent Number 5,148,708; hereinafter referred to as Murata). Murata discloses a liquid

Art Unit: 2856

level sensor for detecting a level of an electrolyte where: a pair of resistance films are formed on an insulating substrate: a plurality of electrodes are intermittently mounted on the resistance films in the longitudinal direction; the resistance films are soaked in the electrolyte in the vertical direction along the longitudinal direction; the liquid surface is detected from the variation of the resistance value of the resistance films caused by the short-circuiting of pairs of the electrodes in the electrolyte. The exposed surface of the resistance film is covered by a moisture-resistance film (please see the abstract).

In reference to claim 1, Murata discloses in the disclosure and shows in figure 7, a sensor element with a substrate (22) a plurality of electrodes (26a1,...26a-n) adapted to be contacted individually where the electrodes are networked with electrical connections, wherein the electrodes are always positioned opposite one another, separated by a distance, to form electrode pairs, and the pairs recur periodically over the length of the sensor element

In regard to claim 2, it is disclosed that the electrodes are coated with a resistance film (24b) (see column 1 lines 50-56).

In regard to claim 3, the limitations disclosed here are clearly shown in figure 7 of Murata.

In regard to claim 5, a substrate made of plastic is disclosed (see column 1 lines 39-45)

In regard to claim 7, the means for determining liquid level where the surface being wet is used to ascertain liquid level is disclosed.

Claim Rejections - 35 USC § 103

23. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

Art Unit: 2856

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

24. Claims 4, 6, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murata et al. (U.S. Patent Number 5,148,708).

In regard to claim 4, Murata discloses that the interval between the electrodes is set to less than 1 mm (see column 4 lines 5-8).

In regard to claim 6, though the Murata reference discloses the electrodes are made of silver, the metals in the claim are well known to one of ordinary skill in the art to make electrodes.

In regard to claims 11 and 12, the methods of measuring liquid level utilizing the apparatus disclosed in Murata to compare resistance values and using the resistance values to determine liquid level is disclosed.

Allowable Subject Matter

25. Claims 8 and 9 are allowed.

26. The following is an examiner's statement of reasons for allowance: An arrangement for measuring capillary filling, including a sensor element wherein the sensor element is attached to a capillary in such a way that the sensor-active partial electrodes are situated inside the capillary, and that at least one conductivity boundary of the capillary filling is located in the region of the sensor element, in combination with all other limitations of the independent claim is not disclosed nor deemed obvious in view of the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Art Unit: 2856

Conclusion

27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Donald et al. (U.S. Patent Number 6,212,956) discloses a high output capacitive detector that utilizes electrode pairs to detect liquid in a capillary. Miller et al. (U.S Patent Number 4,801,865) discloses a moisture sensor probe with a substrate and electrode pairs.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney T. Frank whose telephone number is (703) 306-5717. The examiner can normally be reached on M-F 9am -5:30p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (703) 305-4705. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3431.

RTF
March 19, 2003

HELEN KWOK
PRIMARY EXAMINER

